

Claim 6 relates to a method for producing the resin composition and claim 11 further defines the catalyst.

All of these claims require from 1.0 to 7.5 parts by weight of ortho cresol per 100 parts by weight of the 2,6-dimethylphenol.

JP'199 discloses ortho cresol as a comonomer with 2,6-dimethylphenol in a flame-retardant polyphenylene ether resin composition containing an organic phosphorous compound, but there is no disclosure of the amount of ortho cresol used.

Similarly, JP'173 discloses a polyphenylene ether resin made from 2,6-dimethylphenol containing o-cresol, but again there is no disclosure of the amount of o-cresol, other than it is a "small amount." See page 17, line 17 of the translation.

As pointed out in the last Reply, a feature of the present invention is the anti-dripping properties that are obtained upon burning of the claimed resin composition when the amount of ortho cresol is from 1.0 to 7.5 parts by weight. As can be seen from Table 2, with reference to Table 1 which shows the amounts of ortho cresol used in Examples 1-4, anti-dripping properties were exhibited in Examples 1-4 when the amount of ortho cresol ranged from 1 to 7 parts by weight. However, in Comparative Examples 1-3 where the composition contains only 100 ppm of ortho cresol, i.e., .01 parts by weight, (See page 17, line 18-19 of the specification), the composition did not exhibit anti-dripping properties. Thus it is important that the phenol contain the claimed higher amounts of ortho cresol.

Conventionally, 2,6-dimethylphenol (monomer of PPE) is produced by the consecutive methylation of phenol, which starts from phenol via ortho cresol to 2,6-dimethylphenol. It is quite difficult to separate 2,6-dimethylphenol and ortho cresol

perfectly. Therefore, a small amount of ortho cresol is typically included in 2,6-dimethylphenol. The amount of included ortho cresol is usually 100-2000ppm in present technology.

Thus the description in Ibe that the starting 2,6-dimethylphenol material "may contain a small amount, for example about 1% by weight or less, of o-cresol," (column 3, lines 44-45) means that such a small amount of ortho cresol, which is technically hard to remove, can be tolerated into the 2,6-dimethylphenol. This is consistent with JP'173 where it also states that "small amounts" of o-cresol may be present "without any problem." Page 17, line 19. There is no description in Ibe of using higher amounts, which would be inconsistent with the phrase "or less," nor is there any description of adding ortho cresol to the 2,6-dimethylphenol in the Examples of the reference. More importantly, there is no description about the benefits obtained by adding higher amounts of ortho cresol in a flame retardant composition.

As discussed above, the point of the invention is to use a PPE obtained by polymerizing a 2,6-dimethylphenol containing ortho cresol in an amount higher than technically includable (i.e., unremovable). This PPE is not the same as that of Ibe. Nor is it obvious from the description of Ibe, because the data shows that using the higher amounts claimed results in advantages not appreciated by the cited reference. In Ibe, it is only disclosed that o-cresol can be tolerated at low levels. There is no description about the benefits obtained by adding higher amounts. Note that Ibe does not disclose 1% or more, but rather 1% or less.

Accordingly, even though there may be an overlap in the claimed range of ortho cresol and that disclosed in Ibe, it cannot be said that it would be obvious to use such

an amount in JP'199 because Ibe not only teaches away from using any higher amount and within the range claimed, but it does not disclose any benefits that would be obtained by using such an amount in the flame retardant composition of JP'199.

As noted by the Federal Circuit and as expressed, for example, in Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 227 U.S.P.Q. 543 (Fed. Cir. 1985) at page 551:

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.

Further, in Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 U.S.P.Q. 2d 1434 (Fed. Cir. 1988), the court noted:

Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. [837 F.2d at 1051, 5 U.S.P.Q. 2d at 1438, citing Lindemann, 730 F.2d 1452, 1462, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984).]

or the more recent case of In re Kotzab, 217 F.3d 1365, 1369-70, 55 U.S.P.Q. 2d at 1313, 1316 (Fed. Cir. 2000);

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of the invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood many prompt one to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.

Most if not all inventions arise from a combination of old elements. Thus, every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of

making the specific combination that was made by the applicant. [citations omitted] (Emphasis added).

Where is the “desirability” suggested in lbe of making the substitution suggested by the Examiner? As noted by the court in in re Dow Chemical Co., 837 F.2d 469, 5 U.S.P.Q. 2d 1529 (Fed. Cir. 1988) “both the suggestion of the invention and the expectation of its success must be found in the prior art (emphasis added). See also M.P.E.P. §716.02(a). The only disclosure in lbe is that 1% can be tolerated, not that it would provide the beneficial results that applicants obtained.

The Examiner comments that it would be obvious to use the PPE of lbe in the composition of JP’199 “in order to take advantage of its excellent properties.” Page 2, paragraph 3. However, as noted by the Examiner, these properties are “superior water resistance and impact resistance.” What have these to do with anti-dripping properties of a flame retardant composition? How could it be obvious to take advantage of unknown properties? Thus it is submitted it would not be obvious to use the PPE of lbe in the composition of JP’199.

Accordingly, it is submitted that claims 1-11 are not obvious in view of the cited combination of references, and its withdrawal as a ground of rejection of the claims is requested.

It is believed claims 1-11 are in condition for allowance.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: 

Arthur S. Garrett
Reg. No. 20,338
Tel: 202 408-4091

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